

WHAT IS CLAIMED IS:

1. A method for encoding a digital image using a digital video coder that encodes a digital video frame using video segments, each video segment representing data from multiple scattered regions of a digital video frame presented to the digital video coder, the

5 method comprising:

segmenting the digital image into a set of blocks;

presenting the blocks to the digital video coder as part of a larger, synthesized digital video frame, the blocks inserted into the digital video frame so as to substantially occupy frame locations corresponding to selected video segments in the video segment

10 encoding order of the digital video coder;

encoding the synthesized digital video frame with the digital video coder, thereby producing a coded output stream comprising multiple video segments; and

selecting, from the coded output stream, those video segments corresponding to the digital image.

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2. The method of claim 1, wherein the set of blocks are presented to the digital video coder substantially in the order received, by placing them substantially in that order into the frame locations corresponding to selected video segments substantially in the order that the selected video segments are presented to the coder.

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3. The method of claim 1, further comprising padding the set of blocks in the synthesized digital video frame by copying data from the digital image to frame locations adjacent the frame locations of the blocks in the synthesized digital video frame.

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4. The method of claim 1, wherein the digital image is part of a digital video

sequence, further comprising:

presenting each original frame of the digital video sequence to the digital video coder for two consecutive frame times, with a following frame presented in a different set of frame locations than the frame locations selected for the preceding frame.

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5. A method for transmitting a digital video sequence using a digital video coder that encodes a digital video frame using video segments, each video segment representing data from multiple scattered regions of a digital video frame presented to the digital video coder, the method comprising:

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segmenting an original frame of the digital video sequence into a set of blocks;

presenting the blocks to the digital video coder as part of a larger, synthesized digital video frame, the blocks inserted into the digital video frame so as to substantially occupy frame locations corresponding to selected video segments in the video segment encoding order of the digital video coder;

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encoding the synthesized digital video frame with the digital video coder, thereby producing a coded output stream comprising multiple video segments;

selecting, from the coded output stream, those video segments corresponding to the digital image;

transmitting the selected video segments to a receiver;

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inserting the selected video segments into a coded input stream;

presenting the coded input stream to a digital video decoder for decoding into a second synthesized digital video frame; and

selecting, from the second synthesized digital video frame, reconstructed blocks corresponding to the set of blocks of the original frame of the digital video sequence; and

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combining the reconstructed blocks to form an output digital video frame

corresponding to the original frame.

6. The method of claim 5, wherein the set of blocks are presented to the digital video encoder substantially in the order received, by placing them substantially in that order into
5 the frame locations corresponding to selected video segments substantially in the order that the selected video segments are presented to the encoder.

7. The method of claim 5, further comprising padding the set of blocks in the synthesized digital video frame by copying data from the original frame to frame locations
10 adjacent the frame locations of the blocks in the synthesized digital video frame.

8. The method of claim 5, further comprising:
presenting each original frame of the digital video sequence to the digital video coder for two consecutive frame times, with a following frame presented in a different set of
15 frame locations than the frame locations selected for the preceding frame.

9. A digital video encoding system comprising:
a digital video coder that encodes input digital video frames into output video segments, each video segment representing data from multiple scattered regions of a digital
20 video frame input to the digital video coder;
an input frame buffer;
a mapper to map blocks of data, from the input frame buffer to a synthesized digital video frame for input to the digital video coder, the blocks of data substantially occupying frame locations of the digital video frame corresponding to selected video
25 segments in the video segment encoding order of the digital video coder; and

a data selector to select video segments from the digital video coder output corresponding to the blocks of data mapped from the input frame buffer.

10. The digital video encoding system of claim 9, further comprising a mode selector
5 to bypass the mapper and data selector in one operational mode.

11. The digital video encoding system of claim 9, further comprising a transmitter to transmit the video segments output by the data selector.

10 12. The digital video encoding system of claim 9, further comprising an encoding frame buffer to hold intermediate encoding data for the digital video coder, the buffer having a buffer size approximately sized to hold intermediate encoding data for one input digital video frame.

15 13. The digital video encoding system of claim 12, wherein intermediate encoding data for one input frame is written to the encoding frame buffer and video segment data is read from the encoding frame buffer concurrently.

14. The digital video encoding system of claim 13, further comprising a second input
20 frame buffer, wherein the mapper maps blocks of data from both input frame buffers to the synthesized video frame in frame locations that avoid placing data from one input frame buffer horizontally adjacent to data from the other input frame buffer.

15. The digital video encoding system of claim 9, wherein the mapper also copies
25 data, horizontally adjacent to a block of data in the input frame, into unused frame locations

of the synthesized digital video frame horizontally adjacent to the mapped block of data.

16. The digital video encoding system of claim 15, wherein the mapper also mirrors data in a block of data in the input frame, into unused frame locations of the synthesized
5 digital video frame adjacent to the mapped block of data.

17. A digital video decoding system comprising:
a digital video decoder that decodes input digital video segments into output video frames, each video segment representing data from multiple scattered regions of an output
10 digital video frame;
an input data buffer to buffer video segments;
a data padder to concatenate video segments from the input data buffer with dummy video segments for input to the digital video decoder; and
a subframe extractor to map the digital video frame regions corresponding to the
15 video segments supplied from the input data buffer into a reconstructed digital video frame.

18. The digital video decoding system of claim 17, further comprising a mode selector to bypass the data padder and subframe extractor in one operational mode.

20 19. The digital video encoding system of claim 17, further comprising a video display to view the reconstructed digital video frame.

20. The digital video encoding system of claim 17, further comprising a decoding frame buffer to hold intermediate decoding data for the digital video decoder, the buffer
25 having a buffer size approximately sized to hold intermediate decoding data for one output

digital video frame.

21. The digital video encoding system of claim 20, wherein intermediate decoding
data for one output frame is read from the decoding frame buffer and video segment data is
5 written to the decoding frame buffer concurrently.

22. The digital video encoding system of claim 21, wherein the data padder
concatenates video segments from two consecutive frames with dummy video segments for
input to the digital video decoder.

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